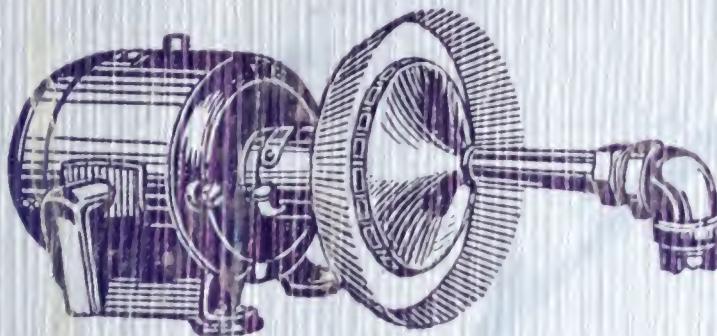


1030-10

ILLUSTRATED BULLETIN No. 25

Descriptive of



*The Bayley Turbo Atomizer*

*The Bayley Turbo Air Washer*

*and Air Conditioner*

for

CLEANING, COOLING, TEMPERING

HUMIDIFYING and DEHUMIDIFYING AIR

Manufactured by

**The Bayley Manufacturing Company**

732-760 Greenbush Street Milwaukee, Wisconsin



## Q10203 Air Washing Problems and Their Solution

The tendency towards concentrating business within small areas and housing it in buildings of great dimensions and large cubical contents, has within a few decades created a necessity for some artificial means for supplying pure, conditioned air to the occupants of such buildings. Atmospheric air in congested districts is filled with impurities, such as the products of imperfect combustion of fuel used for heating, gases emanating from decaying animal droppings in the streets, gasoline fumes from automobiles, and often soot from boats, locomotives and numerous other sources. The air within such buildings is being continually depleted of its life giving oxygen which must be replaced by pure air which is available only through artificial means of cleansing.

Similar conditions are often met with in schools, churches, public and office buildings, theaters, department stores, hotels, restaurants, hospitals, and industrial buildings, where pure air is necessary to the well being of the people housed in such buildings.

Numerous appliances have been brought out by men who have made a study of this problem. One of the early washing installations consisted of a cloth screen suspended from a perforated pipe from which water trickled down the cloth thus forming a wet screen through which air was forced by a fan through a duct into the rooms where artificial ventilation was required. This system while it removed some of the coarser particles of solid matter from the air had a serious drawback, in that the solid particles attached themselves to the cloth, thus making it impossible for air to pass through.

Later an appliance was developed which overcame this difficulty to some extent, but not without encountering a new one. This appliance consisted of a series of banks of spray nozzles through which water was forced at high pressure, thus filling the air chamber with fine mist or spray through which the air passed before entering the distributing system.

## Difficulties Encountered With Ordinary Equipment

The disadvantage of this system is, that in recirculating the water laden with the particles of solid matter from the air, as it passes through the spray, these particles will clog the fine orifices of the nozzles, thus destroying the uniformity of the water screen, and of course lowering the effectiveness of the washer. To overcome this it was found necessary to place a fine strainer screen in the pump intake, and while this prevents some of the coarser particles from entering the nozzles, it necessitates constant watching of the screen and its frequent cleaning, or the water supply to the pump will be interrupted by a clogged screen.

## Clogging of Nozzles

In order to produce a fine spray or mist by pressure only, it is, of course, necessary to have the water pass through a very small orifice, so small in fact that it requires only a very minute particle of solid matter to obstruct the opening in the nozzle. An air washing apparatus that is subject to interruption through clogging is, of course, far from its maximum efficiency, in that it does not give the uninterrupted service that is necessary where an unfailing supply of properly conditioned air is essential.

Even a single clogged nozzle will leave an opening in the spray through which unwashed air will pass to the ducts.

Regardless of whether clogged nozzles are cleaned during a period when the washer is not in operation, air in its natural state will enter the spray chamber, and this unwashed air is afterwards forced into the distributing ducts and the impurities entrained therein inhaled by the occupants of the rooms supplied with air through the system. Then too, the labor involved for cleaning a large number of small nozzles is an expense that greatly increases the cost of supplying properly conditioned air.

Air engineers have experimented for years with a view towards the elimination of these difficulties, but it was not until Mr. E. M. Bassler, Vice-President and Chief Engineer of The Bayley Manufacturing Company, put his shoulder to the wheel, in developing the Turbo Atomizer (described in detail on pages 4, 5 and 6), that the problem was finally solved and the difficulties previously encountered eliminated.

## Difficulties Eliminated

Visions of increased efficiency of Air Washers, and the cost reduction necessary to make air conditioning a complete success, kept Mr. Bassler at the task of solving a problem that up to the time of his successful accomplishment seemed impossible, and like in all revolutionizing discoveries, it was found that the most simple and so far unconsidered method finally brought success. Pressure and fine orifice nozzles had been developed to the limit of possibility and it was not until Mr. Bassler applied the principles of centrifugal force that a nonclogging means of producing a steady, dense and very fine water spray was made possible. The Turbo Atomizer produces a steady, fine spray through a combination of low pressure and centrifugal force. Water is delivered to the center of a rapidly revolving cone shaped rotor which is provided with a set of atomizing pins in its periphery. The water flows outward from the center of this rotor until it encounters the atomizing pins which churn it into a fine spray and the centrifugal force generated by the rotary motion of cone and water, distributes the spray radially from the center of the rotor so that it forms a solid mist screen that is confined to the atomizing chamber by the tank, sidewalls and ceiling of the washer.

---

---

## *Will Not Clog*

---

---

From the foregoing it is evident that a perfect screen is thus formed, not by forcing water through a small orifice at high pressure, but by delivering water to the rotor at low pressure through an orifice large enough to allow the passage of entrained solids without clogging the nozzle, and distributing the spray evenly throughout the chamber.

### Operating Economy

Aside from its cleansing efficiency and the uninterrupted service it assures, the operating economy of the Turbo Atomizer equipped Air Washer is a big point in its favor.

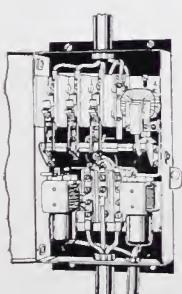
It produces a fine spray and distributes it evenly at a water pressure of only  $2\frac{1}{2}$  pounds per square inch. This means a saving of from 40 to 60% of the power required to operate high pressure systems. It saves the enormous amount of labor required for the periodical taking apart, cleaning and reassembling nozzles in fine orifice high pressure systems, and above all it assures steady, uninterrupted service and a source of clean, healthful air that can be depended upon.

### Motor Control Equipment

Atomizer Motors are equipped with push button control automatic starters having dash-pot type overload relays which automatically shut off the current in case of an overload.

If the maximum cleaning efficiency is required with the minimum humidifying effect, variable speed motors are provided, permitting a reduction in speed of the atomizer and producing a coarser spray.

One Turbo Atomizer will handle from 40 to 60 gallons of water per minute per horse power.



### Humidity Control

Thermostatic control of temperature and humidity is obtained by the use of standard equipment, arranged according to our method for maintaining a constant temperature and dew point.

### The Turbo Atomizer

**Is easily adapted to present installations equipped with high pressure, small-orifice-type nozzles.**

---

*Ch<sup>e</sup>Bayley Turbo Air Washer*

---



## The Bayley Turbo-Atomizer

*THE HEART OF*

---

*Ch<sup>e</sup>Bayley Turbo Air Washer*

---

From the illustration above it is evident that the Bayley Turbo-Atomizer consists of three principal parts, namely: Electric motor, cone-shaped atomizing rotor, and the water delivery nozzle.

**The Motor** is of the fully enclosed water-proof navy type, and it is equipped with an additional protective cover (not shown above) which fully protects it against moisture.

**The Atomizing Rotor**—made of bronze, carefully machined and accurately balanced. The atomizing pins are made of hard brass, pressed into the cone and sweated. This rotor is mounted onto the motor shaft.

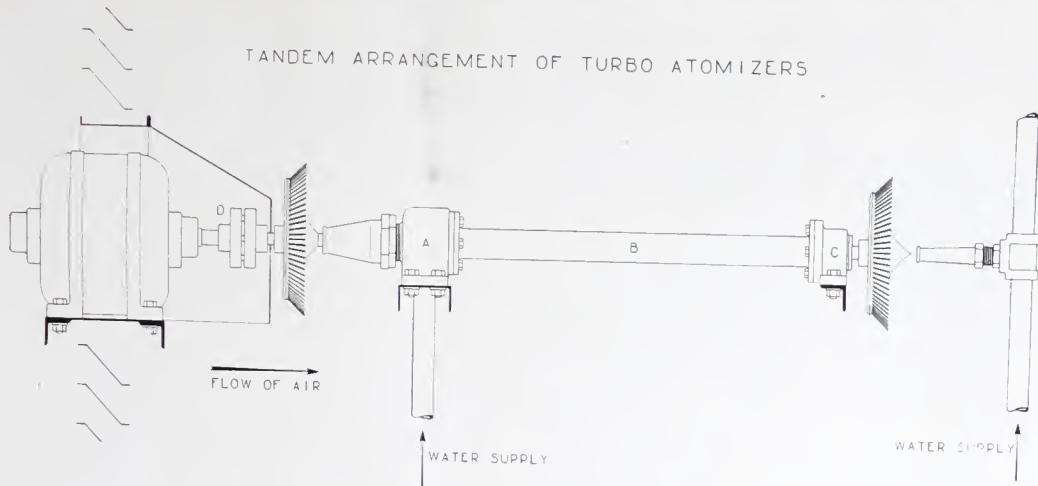
**The Water Delivery Nozzle** is of the fire nozzle type, made of bronze accurately machined to a proper taper to deliver water at high velocity with a minimum of pressure. It has no small passageways to become clogged, as the smallest opening through which water passes is  $\frac{5}{8}$ " in diameter. From this it is evident that it is practically impossible to clog the atomizer with solids entrained in the water during the washing process. The troublesome screen necessary in the pump intake of high pressure systems is entirely eliminated in the Bayley Turbo Air Washer.

### Equal To 100 Ordinary Nozzles

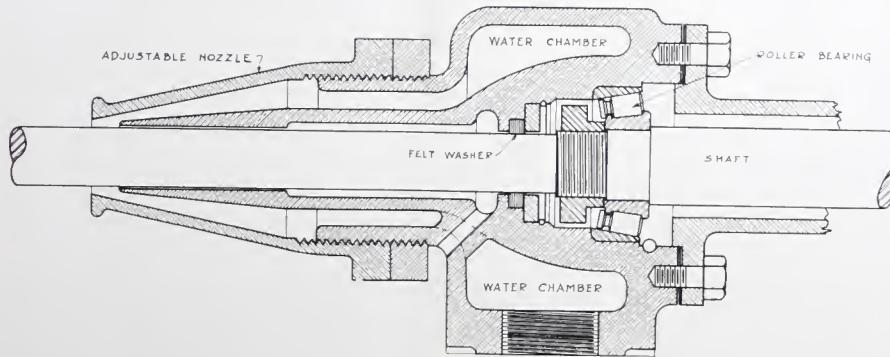
One single Bayley Turbo Atomizer at low water pressure will do the work of 100 ordinary spray nozzles, at high pressure, and without the annoying and expensive cleaning operations required with fine orifice, high pressure nozzle systems.

## Will Not Clog

### Tandem Arrangement of the Turbo-Atomizer



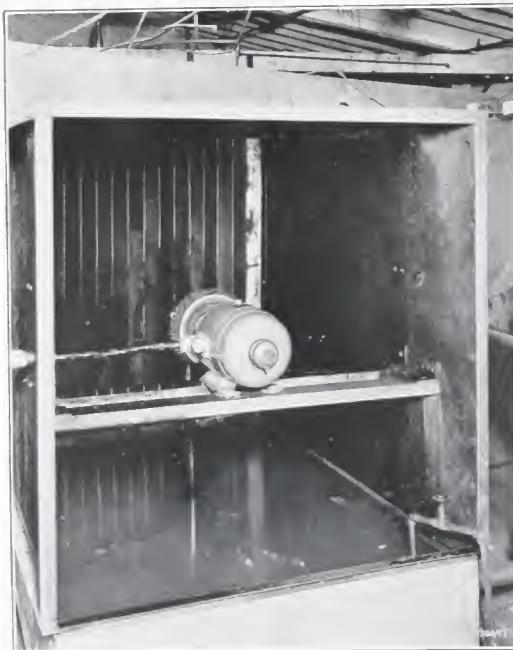
The illustration above shows in detail, the arrangement of atomizers, so placed that the motor is entirely out of the washer chamber. Both atomizers are direct connected to the motor by means of a flexible coupling and extended shaft, which passes through the first nozzle (see detail below) and through metal housing "B" and bearing "C".



### Application

The tandem arrangement of atomizers is furnished for dehumidifying and cooling below the wet-bulb temperature of the incoming air, by means of refrigeration or cold water.

## Principles of Operation



The function of the Atomizer in air washing is, to furnish a constant dense and very fine spray and distribute it evenly throughout the spray chamber, so that air on its passage to the distributing ducts must come into intimate contact with the spray water, thus arresting solids and other impurities and leaving the air pure, wholesome and free from germs and impurities with which atmospheric air is laden. The thoroughness with which the Turbo Atomizer equipped air washer accomplishes this is plainly evident from the two illustrations on this page.

The illustration at the left above shows a photographic view of the air intake side of the spray chamber of a test set erected in the Bayley Laboratories, with the atomizer not in operation. The atomizer is shown in the center with the moisture eliminators forming the background.

The illustration to the right shows a photographic view taken from the same position with the Atomizer in operation. Note the evenness of the water spray, which forms a perfectly even screen of fine particles of atomized water over the entire cross sectional area of the spray chamber. It becomes evident at a glance that air cannot pass this screen without first coming into intimate contact with the spray.

Both the above cuts were made from unretouched photographs.



---

---

*Will Not Clog*

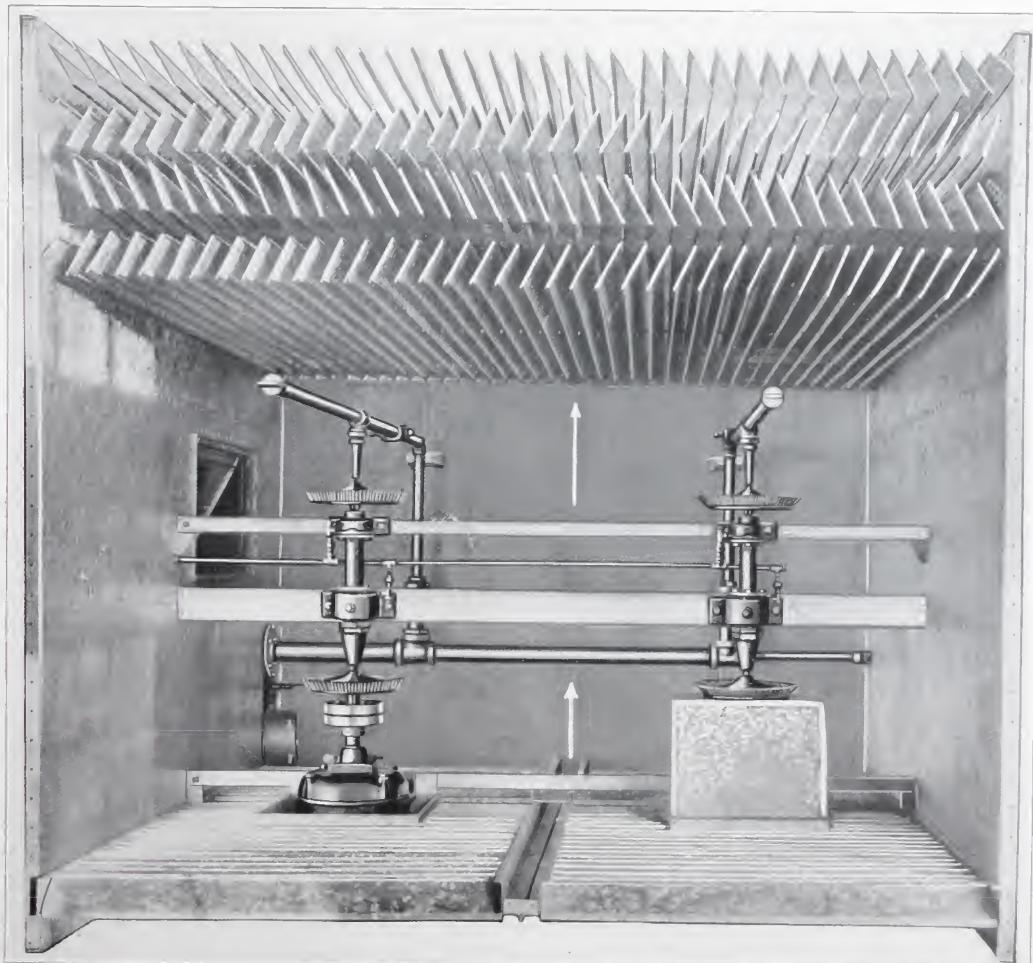
---

---

*The Bayley Turbo Air Washer*

with Tandem Spray Arrangement

The illustration below is a top view of the double tandem Turbo-Atomizer equipped washing chamber of a Turbo-Air Conditioner with the top removed. The four rows of eliminators are shown at the upper end of the illustration, immediately below these, the spray chamber with its two tandem atomizers, (see detail on page 5), one with and the other without motor hood in position.



This arrangement permits the use of recirculated water in one atomizer and fresh cold water in the other. Where high cooling effect is wanted this arrangement is especially desirable.

The white arrows indicate direction of flow of air.

## Spray, Temperature and Humidity Control

The density of the spray is controlled by one valve, regulating the water supply, or by varying the speed of the atomizer or both. Temperature of the air delivered can be either lowered or raised at will. To raise the atmospheric temperature, the air, is passed through a series of tempering coils through which steam is circulated. In extremely cold weather the air temperature is raised above freezing before it enters the spray chamber and brought to the exact required temperature by passing through a second set of coils after it has been cleaned. During hot weather when it is desired to lower the temperature of the air, this may be accomplished by using cold spray water or by further reducing the temperature of the spray water by means of refrigeration.

If it is desired to increase the humidity of the air, this is accomplished by raising the temperature of the spray water. Water at a higher temperature than the air which surrounds it, gives off moisture which is absorbed by the air, thus increasing its relative humidity, and the reverse is true of air passing through water at a lower temperature than that of the air. Where it is desired to reduce the relative humidity this is accomplished by cooling the spray water. This, of course, also reduces the temperature of the air as it passes through the spray. If necessary, the air in such cases is afterwards reheated as it passes through the second set of coils.

Air properly conditioned for ventilating should contain from 40 to 60% of moisture. One cubic foot of air at zero (Fahrenheit) contains .48 or less than one-half of one grain of moisture when saturated. If air with this amount of moisture is heated to 70° Fahrenheit its relative humidity is only about 6%, which is very dry and causes the absorption of the moisture of everything it comes in contact with. It causes the bodily tissue to dry up, shrink and the skin to become rough and hard. In this condition the human body is most susceptible to disease. Air in this condition also causes damage, shrinkage in furniture and any wood work it comes in contact with. The Bayley Turbo Air Washer and Conditioner not only overcomes this by increasing the relative humidity of the air; it cleanses, tempers, cools, or dehumidifies oversaturated air as desired.

## Highest Efficiency

The Turbo Air Washer and Air Conditioner is made in standard sizes of from 4500 to 110,000 cubic feet capacity. Larger or smaller sizes are special. As it operates at a water pressure of from 80 to 90% lower than high pressure systems requiring a pressure of from 15 to 30 lbs. per square inch, it saves from 40 to 60% of the power required to operate such systems. Then too, it saves in maintenance costs and furnishes steady, reliable, uninterrupted service, without which no washer can be effective.

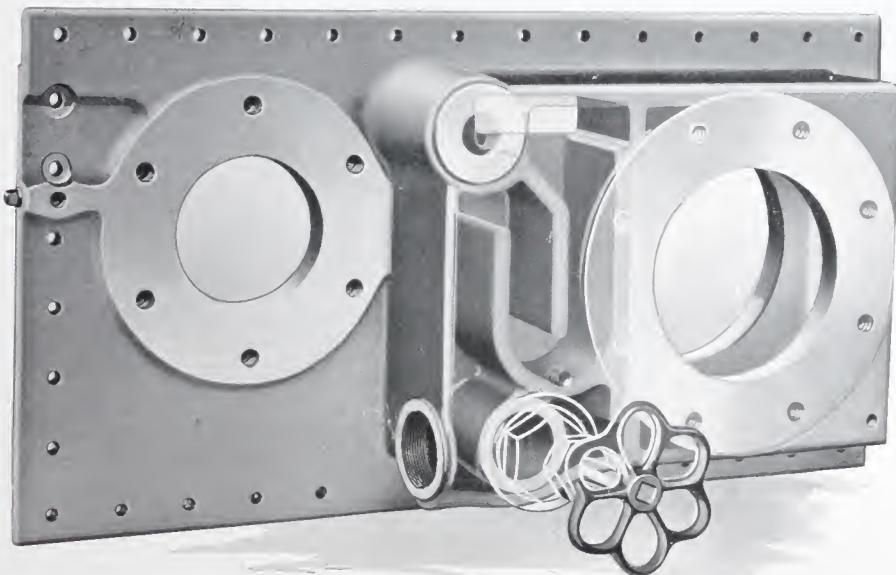
---

## *Will Not Clog*

---

### Construction Details

A complete Bayley Turbo-Air Washer consists of a Turbo-Atomizer enclosed within a casing through which air is drawn by means of a Plexiform fan. This casing may be built of metal, wood, concrete, brick or other suitable material. A standard washer is equipped with a metal housing described in detail on page 13, also on page 24 showing photographic views of the metal encased spray chamber of a large washer installed for one of the big steel plants. The atomizer is installed in a manner that causes the spray to be distributed obliquely to the flow of air. The Spray is confined to the spray chamber by the sidewalls, ceiling and tank, thus making it impossible for air to pass through the spray chamber without first coming in contact with the spray. The spraying water is supplied from a tank shown photographically, and described in detail on pages 11 and 12. A motor driven pump described and illustrated on page 10 delivers the spraying water to the atomizer at low pressure. Below and on the following pages is a detailed description of the various component parts, and of complete structural details.



### The Bayley Service Fitting

The illustration above shows the service fitting, an exclusive Bayley feature not found in other air washers. The object of this fitting is to embody all pipe connections to and from the washer in one unit, thus reducing and practically eliminating the possibility of leaks. This fitting embodies in one casting.

1st. Suction opening from tank to pump.	5th. Tank drain valve.
2nd. Discharge from pump to atomizer.	6th. A footvalve.
3rd. Fresh water supply to the tank.	7th. A self-contained trap in tank drain.
4th. The tank overflow.	8th. The pressure gauge connection.

Another important advantage of this fitting is: No underground drain is required.

The service fitting is made from gray cast iron, carefully machined and galvanized. It is hot riveted to the tank plates in a manner that makes the joint waterproof.

## Water Supply

Water is supplied to the atomizer from the supply tank by means of a centrifugal pump.

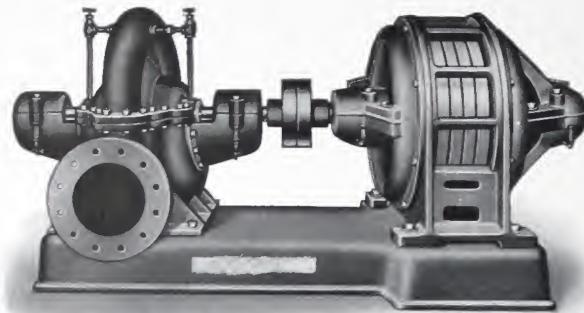


Figure "A" shows a double suction centrifugal pump sometimes used with the Bayley Air Washer and Conditioner, direct connected to an electric motor.

Figure "B" shows a single suction, centrifugal pump direct connected to an electric motor ordinarily used with Bayley Air Washer and Conditioners.

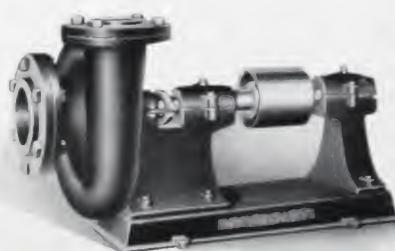
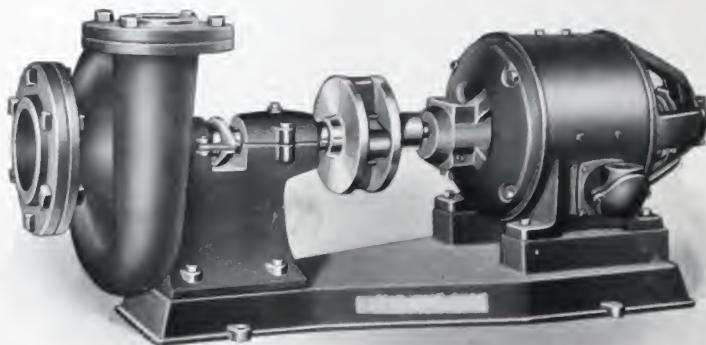


Figure "C" shows a centrifugal pump equipped with pulley for belt drive. Pumps are connected directly to the service fitting with packed flange couplings.

---

## Will Not Clog

---



### Inspection Facilities

One sidewall of the spray chamber is equipped with a cast iron inspection door fitted to a machined cast iron frame which is hot-riveted to the sidewall plates. The doorside of the frame is fitted with rubber packing, set in a groove and the door itself is held firmly against this packing by 2 cams shown on the illustration herewith. The inspection door is fitted with a glass window which leaves the entire interior of the spray chamber open to view without opening the door. This door also provides easy ingress to, and egress from the spray chamber. The floor of the air and spray chambers can be fitted with iron grating to enable an inspector to walk to any part of the chamber without wading through water.

### Illumination

The interior of the air washer is illuminated by means of a marine electric lamp. This makes minute inspection easy, as all parts of the chamber are perfectly and evenly illuminated.

### Tanks

The tanks for holding the water supply are made in two styles—style No. 1 being known as the single unit type. This type is complete, having service fitting attached, all as shown in illustration, figure No. 1.

Figure No. 2 on the next page illustrates the multiple type, being a number of small tanks connected together by a continuous pipe located at one end in line with the bottom of the tanks to insure perfect drainage. This pipe serves the purpose of



Figure 1

## *The Bayley Turbo Air Washer*

equalizing the water level in the several tanks. The multiple type tank is only used where tanks larger than 12 ft. in length are required, and by this design, we obviate the necessity of field work in the erection of tanks such as riveting, soldering, etc., and permits of the in-

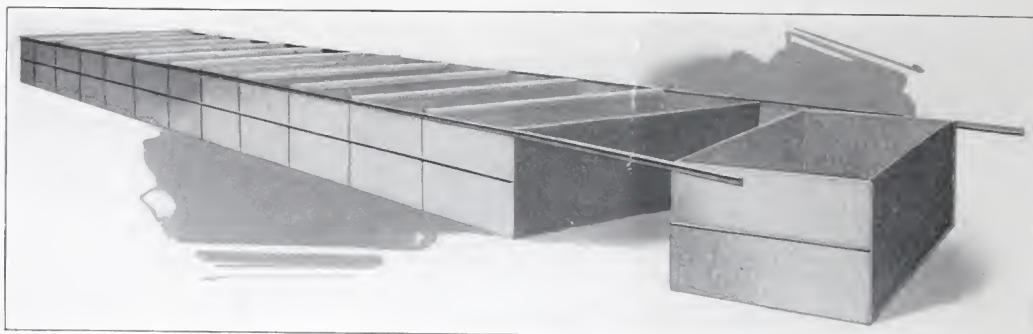


Figure 2

stallation of air washers in buildings having only standard size openings to pass the material through.

The tanks whether single or multiple type, have electrically welded seams, no rivets being used. This method of construction has been found to give greater satisfaction than riveted or soldered joints, in fact, it makes a 100% seam.

The bottom of all tanks have reinforcing bars and all tanks are raised 2" above the floor to permit air to circulate freely, thus preventing corrosion due to moisture gathering from condensation because of cold water in the tank.

### Eliminators

The Bayley Turbo Air Washer is equipped with a set of eliminator plates for removing free moisture that has become entrained in the air during its passage through the spray. These eliminators are shown on the detail drawing on pages 16 and 17, and in photographic views on pages seven, twenty-four and twenty-five. Each plate is set into an individual socket and at an angle of thirty degrees to the flow of the air. Minute particles of water that have been carried through the spray, are deposited on the surface of the eliminator plates and precipitated back into the tank. Single plates, or any number of them may be individually removed by simply lifting them out of the socket. (See top view on page 7.)

### Flooding System

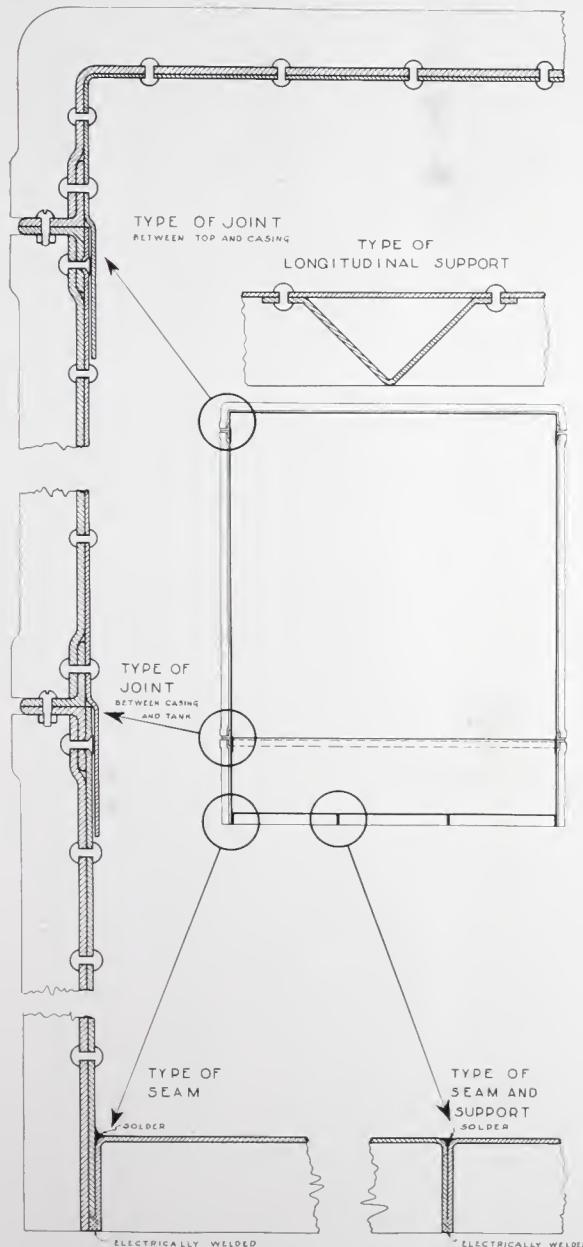
The Bayley Turbo-Air Washer may be equipped with a flooding system but this is not necessary, nor is it desirable, as the Bayley Turbo-Spray with its high and constant washing efficiency precludes the use of flooders which therefore are not recommended, but will be furnished, if desired by special agreement.

---

## *Will Not Clog*

---

### The Casing

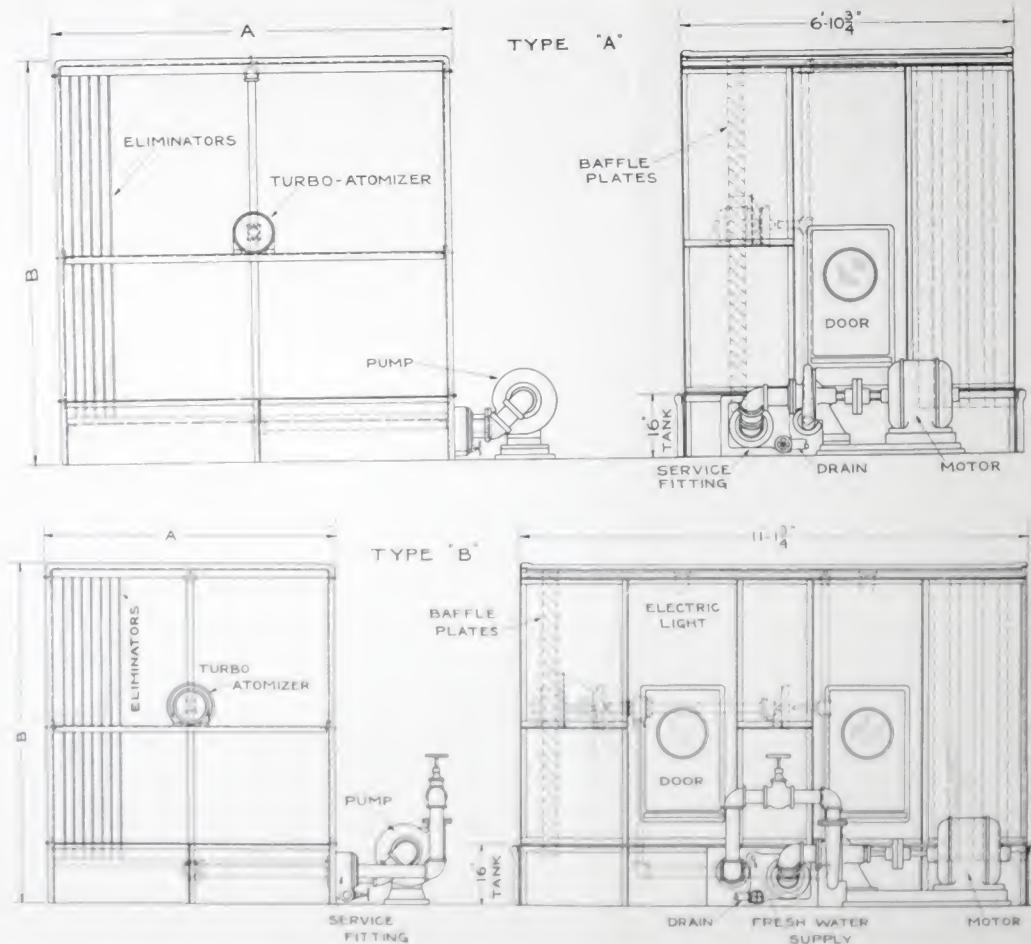


A metal housing is furnished for enclosing the air washing chamber. This casing is made of galvanized steel sheets, and in three sections, viz: top, bottom and sides, the tank described on pages 11 and 12 forming the bottom. For convenience in shipping the casing is made in sections so it can be shipped K. D. The top is fastened to the sides with an overlapping joint, reinforced with galvanized steel angles as shown on the accompanying illustration. This type of construction assures an absolutely watertight seal, yet, is easily assembled and does not require soldering after assembling to make it watertight. All seams and joints are electrically welded and soldered.

If desired, the casing may be made of wood, brick, cement or copper. In case a metal casing is furnished by us, the service fitting and inspection door are fastened to the plates prior to shipment.

*Ches Bayley Turbo Air Washer*

*Ches Bayley Turbo Air Washer*



Types and Dimension

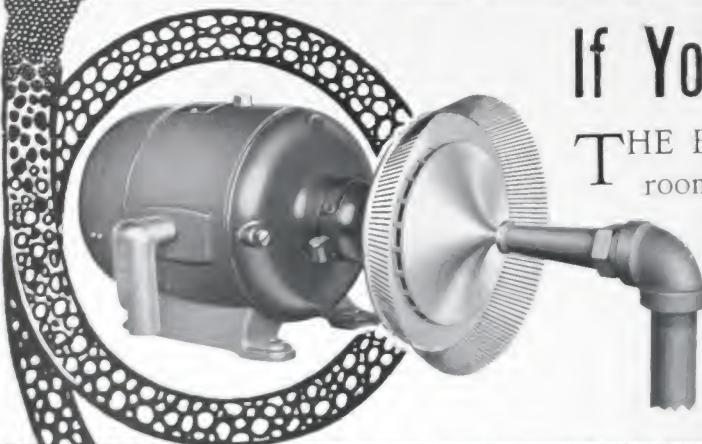
The diagrams above and the tables on this and following pages contain data on overall and inside dimensions of two types of Turbo-Air Washers, as well as humidity and temperature tables, that will enable you to determine with reasonable accuracy, the type and size of washer your particular problem demands. On receipt of detailed information about your problem, our engineering department will prepare accurate plans and specifications, or, if necessary, they will design a special installation in cases where standard equipment does not meet your requirement.

PUMP DISCHARGE	MINIMUM ADDITIONAL WIDTH
1"	1'-6"
1 1/4"	1'-8"
1 1/2"	2'-0"
2"	2'-6"
2 1/2"	2'-6"
3"	3'-0"
3 1/2"	3'-0"

**DATA FOR BAYLEY AIR WASHER**  
TYPE "A"

No	CUBIC FEET PER MIN	SIZE		TOTAL WIDTH A	TOTAL HEIGHT B	PUMP DATA					SHIPPING WEIGHT	
		WIDTH	HEIGHT			GAL PER MIN	H. P. MOTOR	R. P. M.	DISCH IN INCHES	SUCTION IN INCHES	PULLEY DRIVE	MOTOR DRIVE
A- 33	4500	3 x 3	3-3	4-1/2	20	1/2	1750	1	1 1/4	1 1/4	1310	1420
A- 34	6000	3 x 4	3-3	5-1/2	30	"	"	"	1 1/4	1 1/2	1670	1780
A- 35	7500	3 x 5	3-3	6-1/2	"	"	"	"	"	"	1780	1890
A- 44	8000	4 x 4	4-3	5-1/2	"	"	"	"	"	"	1850	1970
A- 45	10000	4 x 5	4-3	6-1/2	"	"	"	"	"	"	1980	2100
A- 54	"	5 x 4	5-3	5-1/2	"	"	"	"	"	"	2140	2260
A- 46	12000	4 x 6	4-3	7-1/2	40	1/2	1750	1	1 1/4	2220	2330	
A- 64	"	6 x 4	6-3	5-1/2	"	"	"	"	"	"	2330	2450
A- 55	12500	5 x 5	5-3	6-1/2	30	"	"	"	"	"	2300	2420
A- 47	14000	4 x 7	4-3	8-1/2	40	1/2	1750	1	1 1/4	2460	2580	
A- 56	15000	5 x 6	5-3	7-1/2	"	"	"	"	"	"	2560	2670
A- 65	"	6 x 5	6-3	6-1/2	"	"	"	"	"	"	2610	2730
A- 57	17500	5 x 7	5-3	8-1/2	"	"	"	"	"	"	2710	2830
A- 75	"	7 x 5	7-3	6-1/2	"	"	"	"	"	"	2830	2940
A- 66	18000	6 x 6	6-3	7-1/2	"	"	"	"	"	"	2890	3010
A- 58	20000	5 x 8	5-3	9-1/2	"	"	"	"	"	"	2970	3090
A- 85	"	8 x 5	8-3	6-1/2	"	"	"	"	"	"	3130	3250
A- 67	21000	6 x 7	6-3	8-1/2	"	"	"	"	"	"	3070	3180
A- 76	"	7 x 6	7-3	7-1/2	"	"	"	"	"	"	3220	3340
A- 68	24000	6 x 8	6-3	9-1/2	"	"	"	"	"	"	3340	3460
A- 86	"	8 x 6	8-3	7-1/2	"	"	"	"	"	"	3450	3570
A- 77	24500	7 x 7	7-3	8-1/2	"	"	"	"	"	"	3420	3540
A- 69	27000	6 x 9	6-3	10-1/2	50	3/4	1750	1 1/2	2	3560	3710	
A- 96	"	9 x 6	9-3	7-1/2	"	"	"	"	"	"	3730	3870
A- 78	28000	7 x 8	7-3	9-1/2	40	1/2	1750	1 1/4	1 1/2	3620	3740	
A- 87	"	8 x 7	8-3	8-1/2	"	"	"	"	"	"	3780	3890
A- 610	30000	6 x 10	6-3	11-1/2	50	3/4	1750	1 1/2	2	3840	3990	
A- 106	"	10 x 6	10-3	7-1/2	"	"	"	"	"	"	3960	4210
A- 79	31500	7 x 9	7-3	10-1/2	"	"	"	"	"	"	3960	4110
A- 97	"	9 x 7	9-3	8-1/2	"	"	"	"	"	"	4070	4220
A- 88	32000	8 x 8	8-3	9-1/2	40	1/2	1750	1 1/4	1 1/2	3990	4110	
A- 710	35000	7 x 10	7-3	11-1/2	50	3/4	1750	1 1/2	2	4160	4310	
A- 107	"	10 x 7	10-3	8-1/2	"	"	"	"	"	"	4320	4470
A- 89	36000	8 x 9	8-3	10-1/2	"	"	"	"	"	"	4350	4500
A- 98	"	9 x 8	9-3	9-1/2	"	"	"	"	"	"	4410	4560
A- 810	40000	8 x 10	8-3	11-1/2	"	"	"	"	"	"	4570	4720
A- 108	"	10 x 8	10-3	9-1/2	"	"	"	"	"	"	4680	4830
A- 99	40500	9 x 9	9-3	10-1/2	"	"	"	"	"	"	4650	4800
A- 118	44000	11 x 8	11-3	9-1/2	75	1	1750	2	2 1/2	5140	5290	
A- 910	45000	9 x 10	9-3	11-1/2	50	3/4	1750	1 1/2	2	4890	5040	
A- 109	"	10 x 9	10-3	10-1/2	"	"	"	"	"	"	4950	5100
A- 128	48000	12 x 8	12-3	9-1/2	75	1	1750	2	2 1/2	5420	5630	
A- 119	49500	11 x 9	11-3	10-1/2	"	"	"	"	"	"	5430	5570
A- 1010	50000	10 x 10	10-3	11-1/2	50	3/4	1750	1 1/2	2	5210	5360	
A- 138	52000	13 x 8	13-3	9-1/2	75	1	1750	2	2 1/2	5790	5940	
A- 129	54000	12 x 9	12-3	10-1/2	"	"	"	"	"	"	5830	5980
A- 1110	55000	11 x 10	11-3	11-1/2	"	"	"	"	"	"	5810	5960
A- 148	56000	14 x 8	14-3	9-1/2	"	"	"	"	"	"	6070	6220
A- 139	58500	13 x 9	13-3	10-1/2	"	"	"	"	"	"	6120	6270
A- 1210	60000	12 x 10	12-3	11-1/2	"	"	"	"	"	"	6130	6280
A- 158	"	15 x 8	15-3	9-1/2	"	"	"	"	"	"	6350	6500
A- 149	63000	14 x 9	14-3	10-1/2	"	"	"	"	"	"	6520	6670
A- 168	64000	16 x 8	16-3	9-1/2	"	"	"	"	"	"	6760	6910
A- 1310	65000	13 x 10	13-3	11-1/2	"	"	"	"	"	"	6550	6700
A- 159	67500	15 x 9	15-3	10-1/2	"	"	"	"	"	"	6820	6970
A- 178	68000	17 x 8	17-3	9-1/2	100	1 1/2	1750	1	"	7110	7210	
A- 1410	70000	14 x 10	14-3	11-1/2	75	1	1750	1	"	6870	7020	
A- 169	72000	16 x 9	16-3	10-1/2	"	"	"	"	"	"	7250	7400
A- 188	"	18 x 8	18-3	9-1/2	100	1 1/2	1750	2	"	7480	7580	
A- 1510	75000	15 x 10	15-3	11-1/2	75	1	1750	1	"	7270	7420	
A- 198	76000	19 x 8	19-3	9-1/2	100	1 1/2	1750	1	"	7760	7860	
A- 179	76500	17 x 9	17-3	10-1/2	"	"	"	"	"	"	7610	7720
A- 1610	80000	16 x 10	16-3	11-1/2	75	1	1750	1	"	7640	7790	
A- 208	"	20 x 8	20-3	9-1/2	100	1 1/2	1750	2	"	8140	8240	
A- 189	81000	18 x 9	18-3	10-1/2	"	"	"	"	"	"	8020	8120
A- 218	84000	21 x 8	21-3	9-1/2	125	2	1750	1	"	8540	8670	
A- 1710	85000	17 x 10	17-3	11-1/2	100	1 1/2	1750	1	"	8130	8230	
A- 199	85500	19 x 9	19-3	10-1/2	"	"	"	"	"	"	8310	8420
A- 228	86000	22 x 8	22-3	9-1/2	125	2	1750	1	"	8920	9050	
A- 209	90000	20 x 9	20-3	10-1/2	100	1 1/2	1750	1	"	8710	8820	
A- 1810	"	18 x 10	19-3	11-1/2	"	"	"	"	"	"	8550	8650
A- 219	94500	21 x 9	21-3	10-1/2	125	2	1750	1	"	9200	9330	
A- 1910	95000	19 x 10	19-3	11-1/2	100	1 1/2	1750	1	"	8970	9070	
A- 229	98000	22 x 9	22-3	10-1/2	125	2	1750	1	"	9600	9730	
A- 2010	100000	20 x 10	20-3	11-1/2	100	1 1/2	1750	1	"	9310	9410	
A- 2110	105000	21 x 10	22-3	11-1/2	150	2	1750	2	2 1/2	9840	10090	
A- 2210	110000	22 x 10	22-3	11-1/2	"	"	"	"	"	10160	10400	

# TEMPERATURE and HUMIDITY



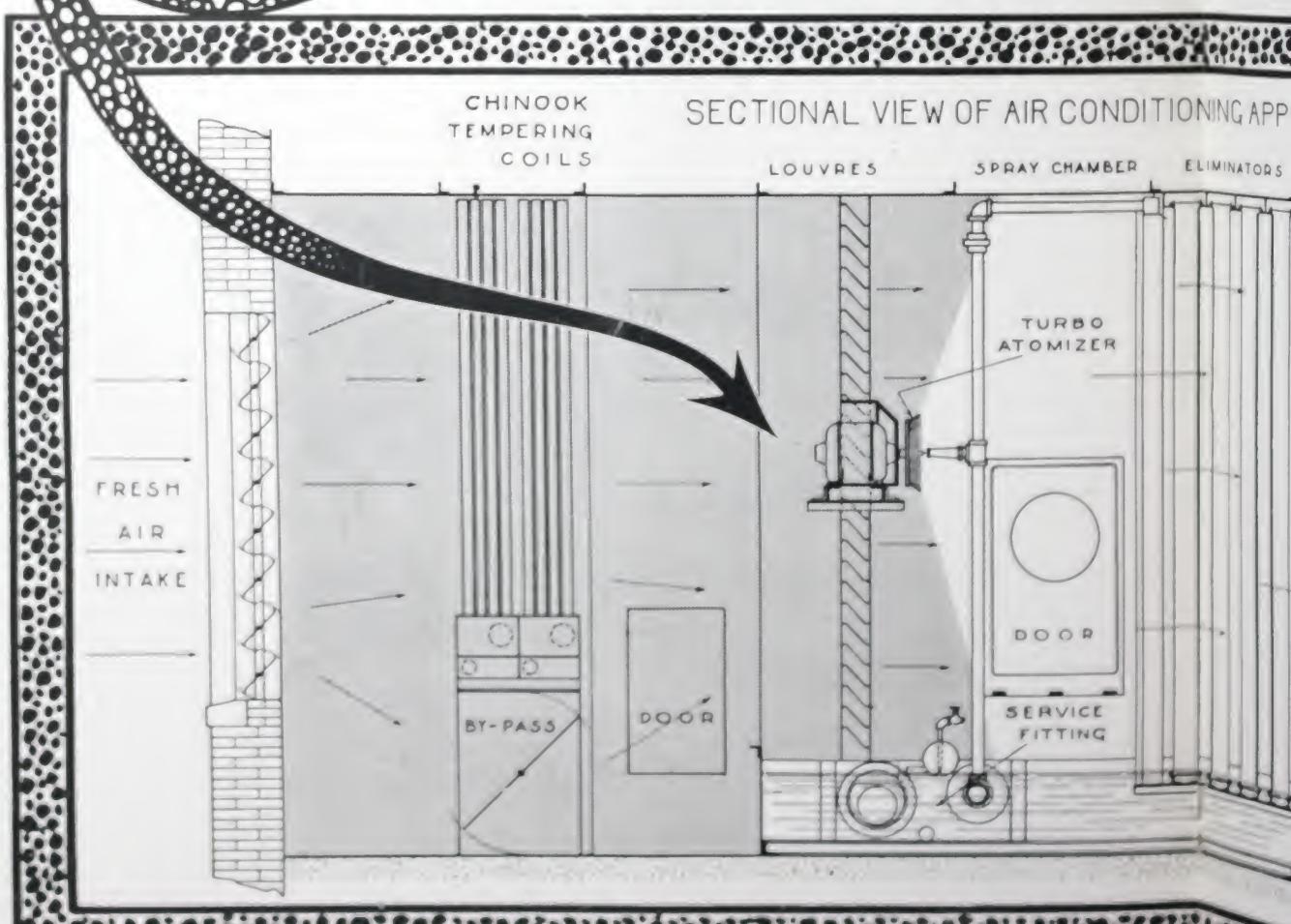
## If Your Building Is Equipped

THE Bayley Turbo Air Washer may be equipped with

rooms can be controlled to a degree, and the moisture

This means that you can regulate interior weather conditions to suit your needs. If the temperature is 100° in the shade, or 40° below zero, your interior temperature can be controlled to a degree, and the moisture content of the air can be regulated to a degree.

### THE TURBO AIR WASHER DE RIGHT



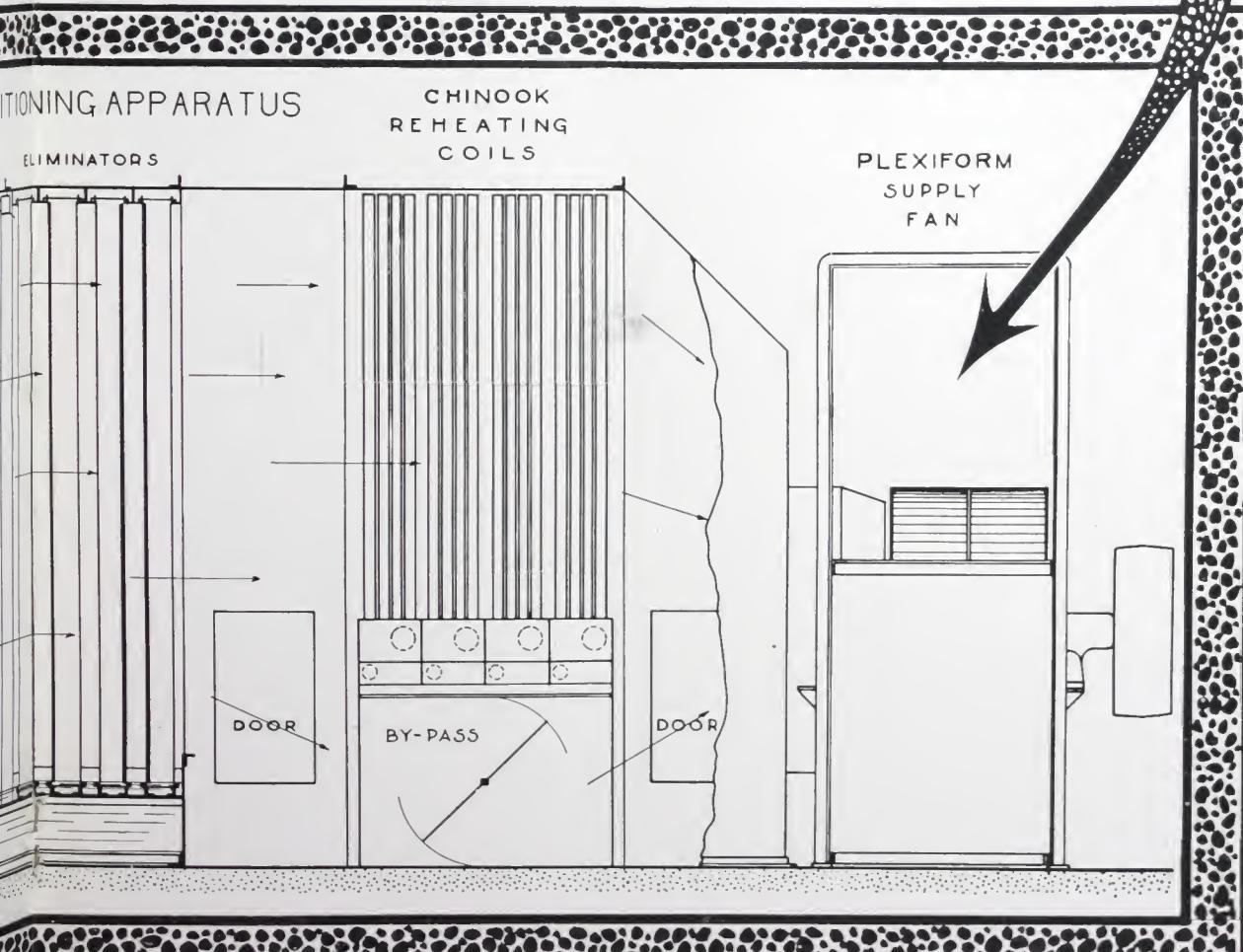
# HUMIDITY OBEY YOUR WILL

## equipped With A Bayley Turbo Air Conditioner

equipped with regulating devices, so the temperature of the air delivered into the and the moisture or humidity content to a certain predetermined percentage.

interior weather conditions to suit your exact requirements. Whether the temperature outside, your interior temperature can be kept constant and on a par with the vigor and enthusiasm, the air you breathe is free from injurious impurities. This means greater bodily comfort for employees.

**WASHER DELIVERS THE EQUIVALENT OF SEA BREEZES  
RIGHT INTO YOUR BUILDING.**



**DATA FOR BAYLEY AIR WASHER**  
**TYPE 'B'**

No.	CUBIC FEET PER MIN.	SIZE		TOTAL WIDTH "A"	TOTAL HEIGHT "B"	PUMP			DATA		PULLEY DRIVE	MOTOR DRIVE	SHIPPING WEIGHT
		WIDTH W	HEIGHT H			GAL PER MIN	H. P. MOTOR A.C. DC	R.P.M.	DISCH. IN INCHES	SUCTION IN INCHES			
B- 33	4500	3 x 3	3-3	4-1½	40	1/2	1750		1½	1½	1870	1990	
B- 34	6000	3 x 4	3-3	5-1½	"	"	"	"	"	"	2270	2390	
B- 35	7500	3 x 5	3-3	6-1½	50	3/4	"	"	1½	2	2430	2580	
B- 44	8000	4 x 4	4-3	5-1½	40	1/2	"	"	1½	1½	2510	2630	
B- 45	10000	4 x 5	4-3	6-1½	50	3/4	"	"	1½	2	2680	2830	
B- 54	"	5 x 4	5-3	5-1½	"	"	"	"	"	"	2860	3010	
B- 46	12000	4 x 6	4-3	7-1½	75	1	"	"	2	2½	2950	3100	
B- 64	"	6 x 4	6-3	5-1½	"	"	"	"	"	"	3120	3270	
B- 55	12500	5 x 5	5-3	6-1½	50	3/4	"	"	1½	2	3050	3200	
B- 47	14000	4 x 7	4-3	8-1½	75	1	"	"	2	2½	3210	3360	
B- 56	15000	5 x 6	5-3	7-1½	"	"	"	"	"	"	3340	3490	
B- 65	"	6 x 5	6-3	6-1½	"	"	"	"	"	"	3410	3560	
B- 57	17500	5 x 7	5-3	8-1½	"	"	"	"	"	"	3500	3650	
B- 75	"	7 x 5	7-3	6-1½	"	"	"	"	"	"	3680	3830	
B- 66	18000	6 x 6	6-3	7-1½	"	"	"	"	"	"	3720	3870	
B- 58	20000	5 x 8	5-3	9-1½	100	1½	"	"	"	"	3860	3960	
B- 85	"	8 x 5	8-3	6-1½	"	"	"	"	"	"	4090	4210	
B- 67	21000	6 x 7	6-3	8-1½	75	1	"	"	"	"	3920	4070	
B- 76	"	7 x 6	7-3	7-1½	"	"	"	"	"	"	4090	4240	
B- 68	24000	6 x 8	6-3	9-1½	100	1½	"	"	"	"	4280	4390	
B- 86	"	8 x 6	8-3	7-1½	"	"	"	"	"	"	4240	4550	
B- 77	24500	7 x 7	7-3	8-1½	75	1	"	"	"	"	4320	4470	
B- 69	27000	6 x 9	6-3	10-1½	100	1½	"	"	"	"	4540	4640	
B- 96	"	9 x 6	9-3	7-1½	"	"	"	"	"	"	4770	4880	
B- 78	28000	7 x 8	7-3	9-1½	"	"	"	"	"	"	4610	4710	
B- 87	"	8 x 7	8-3	8-1½	"	"	"	"	"	"	4790	4890	
B- 610	30000	6 x 10	6-3	11-1½	125	2 3/4	"	"	"	"	4840	4970	
B- 106	"	10 x 6	10-3	7-1½	"	"	"	"	"	"	5060	5190	
B- 79	31500	7 x 9	7-3	10-1½	100	1½	"	"	"	"	4980	5090	
B- 97	"	9 x 7	9-3	8-1½	"	"	"	"	"	"	5140	5250	
B- 88	32000	8 x 8	8-3	9-1½	"	"	"	"	"	"	5030	5130	
B- 710	35000	7 x 10	7-3	11-1½	125	2	"	"	"	"	5210	5340	
B- 107	"	10 x 7	10-3	8-1½	"	"	"	"	"	"	5450	5580	
B- 89	36000	8 x 9	8-3	10-1½	100	1½	"	"	"	"	5430	5530	
B- 98	"	9 x 8	9-3	9-1½	"	"	"	"	"	"	5510	5610	
B- 610	40000	8 x 10	8-3	11-1½	125	2	"	"	"	"	5670	5800	
B- 108	"	10 x 8	10-3	9-1½	"	"	"	"	"	"	5830	5960	
B- 99	40500	9 x 9	9-3	10-1½	100	1½	"	"	"	"	5770	5880	
B- 118	44000	11 x 8	11-3	9-1½	150	2	"	"	2½	3	6480	6730	
B- 910	45000	9 x 10	9-3	11-1½	125	"	"	"	2	2½	6040	6170	
B- 109	"	10 x 9	10-3	10-1½	"	"	"	"	"	"	6120	6250	
B- 128	48000	12 x 8	12-3	9-1½	150	"	"	"	2½	3	6810	7060	
B- 119	49500	11 x 9	11-3	10-1½	"	"	"	"	"	"	6790	7040	
B- 1010	50000	10 x 10	10-3	11-1½	125	"	"	"	2	2½	6400	6530	
B- 138	52000	13 x 8	13-3	9-1½	175	"	"	"	3	3½	7250	7480	
B- 129	54000	12 x 9	12-3	10-1½	150	"	"	"	2½	3	7250	7490	
B- 1110	55000	11 x 10	11-3	11-1½	"	"	"	"	"	"	7200	7450	
B- 148	56000	14 x 8	14-3	9-1½	175	"	"	"	3	3½	7670	7910	
B- 139	58500	13 x 9	13-3	10-1½	"	"	"	"	"	"	7700	7930	
B- 1210	60000	12 x 10	12-3	11-1½	150	"	"	"	2½	3	7580	7820	
B- 158	"	15 x 8	15-3	9-1½	175	"	"	"	3	3½	8000	8230	
B- 149	63000	14 x 9	14-3	10-1½	"	"	"	"	"	"	8150	8390	
B- 168	64000	16 x 8	16-3	9-1½	200	3	"	"	"	"	8500	8810	
B- 1310	65000	13 x 10	13-3	11-1½	175	2	"	"	"	"	8150	8410	
B- 159	67500	15 x 9	15-3	10-1½	"	"	"	"	"	"	8600	8760	
B- 178	68000	17 x 8	17-3	9-1½	200	3	"	"	"	"	8830	9140	
B- 1410	70000	14 x 10	14-3	11-1½	175	2	"	"	"	"	8530	8790	
B- 169	72000	16 x 9	16-3	10-1½	200	3	"	"	"	"	9020	9330	
B- 188	"	18 x 8	18-3	9-1½	"	"	"	"	"	"	9250	9560	
B- 1510	75000	15 x 10	15-3	11-1½	175	2	"	"	"	"	8990	9250	
B- 198	76000	19 x 8	19-3	9-1½	200	3	"	"	"	"	9580	9890	
B- 179	76500	17 x 9	17-3	10-1½	"	"	"	"	"	"	9360	9670	
B- 1610	80000	16 x 10	16-3	11-1½	"	"	"	"	"	"	9440	9650	
B- 208	"	20 x 8	20-3	9-1½	"	"	"	"	"	"	10010	10220	
B- 189	81000	18 x 9	18-3	10-1½	"	"	"	"	"	"	9810	10120	
B- 218	84000	21 x 8	21-3	9-1½	250	"	"	"	"	"	10590	10900	
B- 1710	85000	17 x 10	17-3	11-1½	200	"	"	"	"	"	9900	10210	
B- 199	85500	19 x 9	19-3	10-1½	"	"	"	"	"	"	10160	10470	
B- 228	88000	22 x 8	22-3	9-1½	250	"	"	"	"	"	11020	11330	
B- 209	90000	20 x 9	20-3	10-1½	200	"	"	"	"	"	10570	10880	
B- 1810	"	18 x 10	19-3	11-1½	"	"	"	"	"	"	10370	10680	
B- 219	94500	21 x 9	21-3	10-1½	300	3½	"	"	3½	4	11340	11680	
B- 1910	95000	19 x 10	19-3	11-1½	200	3	"	"	3	3½	10850	11160	
B- 229	98000	22 x 9	22-3	10-1½	"	"	"	"	"	"	11790	12100	
B- 2010	100000	20 x 10	20-3	11-1½	"	"	"	"	"	"	11260	11570	
B- 2110	105000	21 x 10	21-3	11-1½	300	3½	"	"	3½	4	12050	12390	
B- 2210	110000	22 x 10	22-3	11-1½	"	"	"	"	"	"	12410	12750	

*Ch Bayley Turbo Air Washer*

## Humidity Tables

The following table shows the number of grains of moisture contained in one cubic foot of air at a given dry bulb temperature (shown in the first column) at a given percentage of humidity (shown in the first line of figures.) Thus: A cubic foot of air at a temperature of 90° F. with a relative humidity of 60% contains 8.87 grains of moisture, and vice-versa.

DRY BULB TEMP F°	GRAINS OF MOISTURE PER CUBIC FOOT OF AIR									
	RELATIVE HUMIDITY									
	10	20	30	40	50	60	70	80	90	100
0	0.05	0.10	0.14	0.19	0.24	0.29	0.34	0.39	0.43	0.48
10	0.08	0.16	0.23	0.31	0.39	0.47	0.54	0.62	0.70	0.78
20	0.12	0.25	0.37	0.49	0.62	0.74	0.86	0.99	1.11	1.23
30	0.19	0.39	0.58	0.77	0.97	1.16	1.35	1.55	1.74	1.94
40	0.29	0.57	0.86	1.14	1.42	1.71	1.99	2.28	2.56	2.85
50	0.41	0.82	1.22	1.63	2.04	2.45	2.85	3.26	3.67	4.08
60	0.57	1.15	1.72	2.30	2.87	3.45	4.02	4.60	5.17	5.75
70	0.80	1.60	2.39	3.19	3.99	4.79	5.59	6.38	7.18	7.98
80	1.09	2.19	3.28	4.37	5.47	6.56	7.65	8.75	9.84	10.93
90	1.48	2.96	4.44	5.92	7.39	8.87	10.35	11.83	13.31	14.79
100	1.98	3.95	5.93	7.91	9.88	11.86	13.84	15.81	17.79	19.77
110	2.61	5.22	7.83	10.45	13.06	15.67	18.28	20.89	23.50	26.11
120	3.41	6.81	10.20	13.62	17.03	20.41	23.80	27.20	30.65	34.06
130	4.40	8.81	13.21	17.61	22.02	26.42	30.81	35.23	39.64	44.04
140	5.64	11.29	16.93	22.55	28.18	33.82	39.45	45.20	50.73	56.37
150	7.15	14.30	21.46	28.61	35.77	42.90	50.10	57.25	64.40	71.53
160	8.97	17.95	26.92	35.90	44.86	53.84	62.81	71.78	80.75	89.73
170	11.17	22.33	33.50	44.67	55.84	67.00	78.18	89.30	100.52	111.69
180	13.78	27.55	41.35	55.10	68.88	82.60	96.50	110.22	123.99	137.77
190	16.88	33.76	50.60	67.50	84.39	101.27	118.15	135.00	152.00	168.78
200	20.52	41.03	61.60	82.08	102.59	123.11	143.63	164.20	184.50	205.19
210	24.77	49.54	74.25	99.08	123.85	148.50	173.30	198.00	222.93	247.70

## B. T. U. Tables

The refrigerating capacity required for cooling the spray water to reduce a given volume of air from a known primary temperature, to a predetermined secondary temperature, is shown on the accompanying table.

For instance: It requires 4.98, (practically 5 British Thermal Units (B. T. U.) to reduce the wet bulb temperature of one pound of air from 50° to 40° Fahrenheit. One ton of refrigerating capacity is equal to 200 B. T. U. per minute. Therefore, knowing the quantity and primary temperature, as well as the temperature required, the necessary refrigerating capacity can be determined from the table below.

Entering wet bulb temperature	Heat content of 1 lb. of dry air saturat- ed with vapor.	B. T. U. TO BE EXTRACTED TO REDUCE THE TEMPERATURE OF ONE LB. OF AIR.							
		Degrees F.	B.T.U.	Deg.F.	Deg.F.	Deg.F.	Deg.F.	Deg.F.	Deg.F.
35	13.02	40	15.21	2.19	—	—	—	—	—
		45	17.59	4.57	2.38	—	—	—	—
		50	20.19	7.17	4.98	2.60	—	—	—
		55	23.04	10.02	7.83	5.45	2.85	—	—
		60	26.18	13.16	10.97	8.59	5.99	3.14	—
		65	29.65	16.63	14.44	12.06	9.46	6.61	3.47
		70	33.51	20.49	18.30	15.92	13.32	10.47	7.33
		75	37.81	24.79	22.60	20.22	17.62	14.77	11.63
		80	42.64	29.62	27.43	25.05	22.45	19.60	16.46
		85	48.04	35.02	32.83	30.45	27.85	25.00	21.86
		90	54.13	41.11	39.92	36.54	33.94	31.09	27.95
									24.48
									20.62

---

*Che Bayley* **Turbo Air Washer**

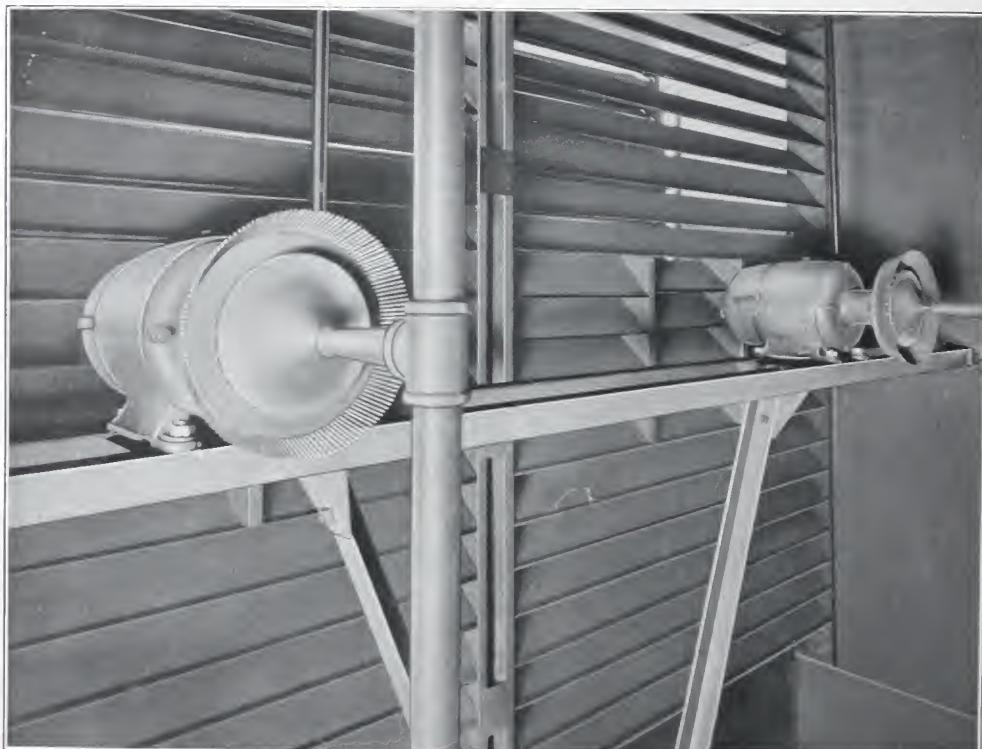
---

*Che Bayley* **Turbo Air Washer**

In The Loop District, Chicago

The illustrations on this and the following page, shows parts of an air washer installation that meets some of the most difficult problems encountered in Air washer practice.

It is located in a prominent restaurant on Randolph street (near State) in the city of



Chicago. Aside from the unusual amount of soot and dust that must be washed out of the air in this congested district, unusually difficult installation conditions had to be met. As shown by the illustration on the opposite page, the washer is installed on the roof of the building in which the restaurant is housed. High rents made space economy necessary, and the engineers decided on a roof installation. The installation consists of a type "A" Turbo Air Washer, and supplies 33,000 cu. feet of cleaned and perfectly conditioned air to the patrons of the restaurant every minute.

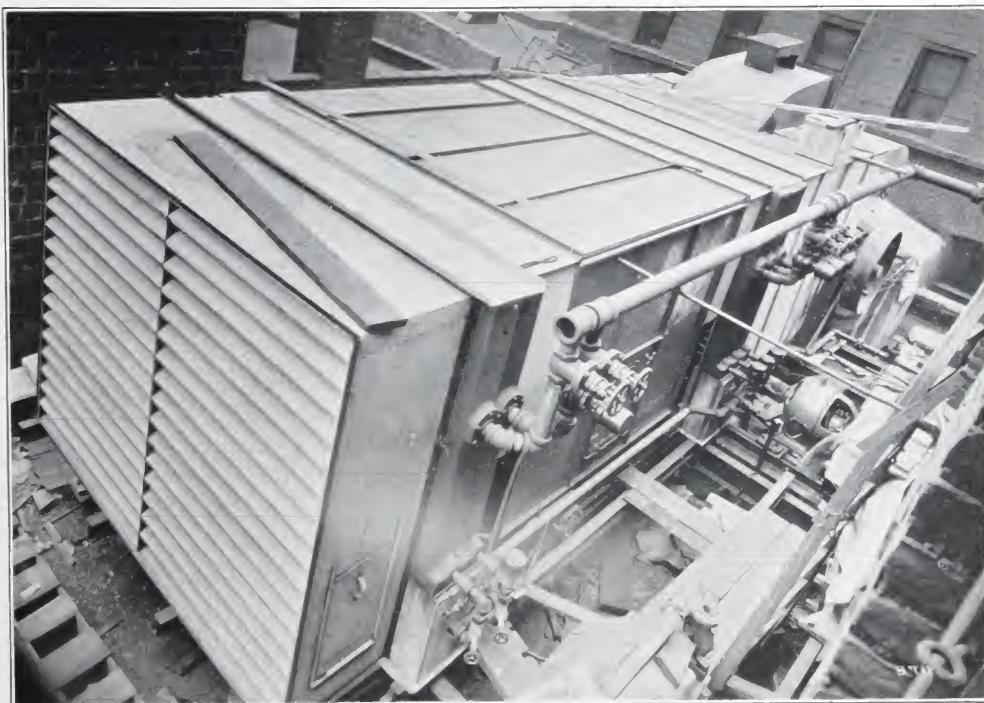
---

## *Will Not Clog*

---

### Solves A Difficult Problem

A restaurant, where huge crowds congregate daily, and where the food in course of preparation and during meals is exposed to the air in the room, is a place where above all, clean air is absolutely necessary if the food is to be kept free from germs and impurities, and the air in such condition that patrons are kept comfortable. This is perhaps one of the oldest and best known restaurants in the Windy City, and one which has always catered to the best class of trade. This class of trade demands strictly sanitary and comfortable surroundings, clean air at a comfortable temperature, as well as appetizing wholesome victuals.

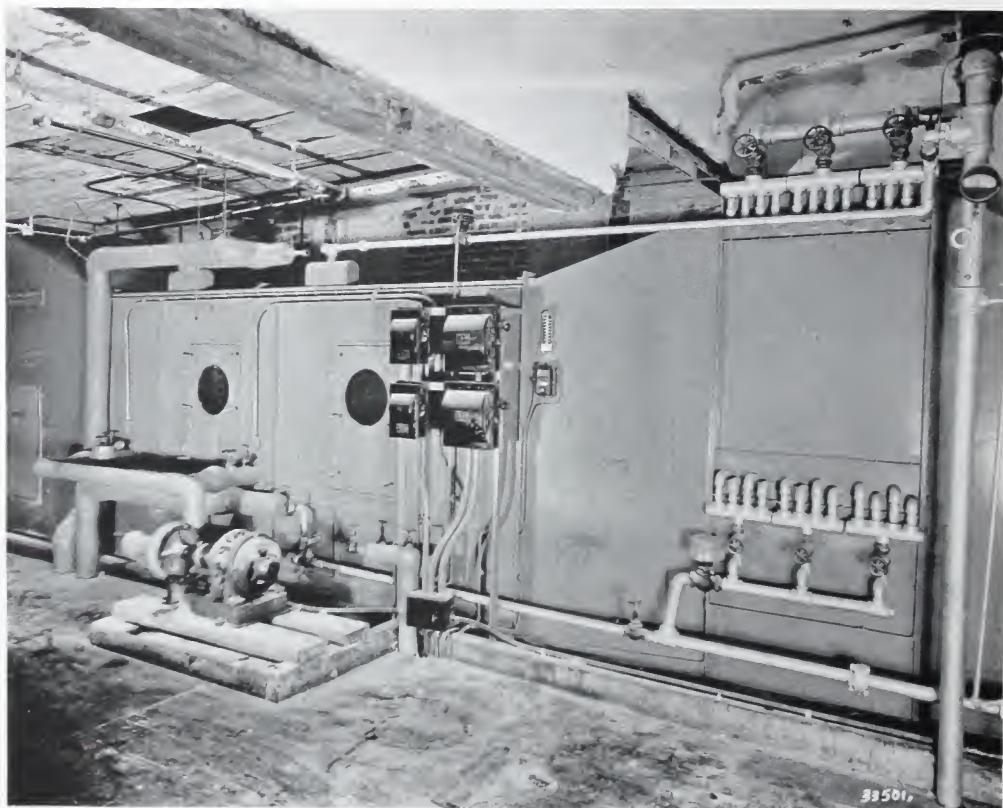


This restaurant has long been famous for its cuisine, and the Turbo Air Conditioner supplies absolutely clean air containing the proper percentage of humidity, at a temperature that is held practically constant throughout the year.

The illustration on page 20 shows the air delivery side of the spray chamber of the washer installation in this restaurant. The illustration above shows the washer during the process of erection on the roof of the restaurant.

## In A Milwaukee Bread Factory

There is perhaps no place where absolutely clean air is of greater importance than in a food producing establishment. Whether the plant produces Ice Cream and dairy products in general, confections, meat products, cereals or bread, the products if exposed to unclean air cannot leave the plant in strictly sanitary and wholesome condition. In the case of a bread factory, there is another important factor that must be taken into consideration,



namely, temperature and humidity control. Bread dough while in the process of fermentation requires a steady temperature or the "lightness" of the bread (which depends on uniform fermentation) will be impaired. If the air is too dry, the surface of the mixture will become hardened during the fermenting process, and this, too, is detrimental to good bread making.

The illustration above shows the air washer in position in the bread factory. Inspection doors, and rotary pump are shown at the left of the view.

---

---

## Will Not Clog

---

---

### Ideal For Food Producing Establishments

The proprietors of this bakery after careful investigation, pronounced The Bayley Turbo Air Washer the ideal equipment for their requirements for the following reasons. "Because it not only assures an unfailing supply of absolutely clean air, but because temperature and humidity uniformity, so necessary in bread making, are always under control of the operator by the simple adjustment of the valves controlling water supply, refrigeration, and steam supply to the tempering and reheating coils." The washer supplies 8,000 cubic feet of washed air per minute.



VIEW OF THE BREAD FACTORY

The Bread Factory, of which only the shipping department and display room are shown above, is one of the largest and most up-to-date bread producing establishments in the country. The factory proper is located at the rear of the buildings shown, while the mills and elevators are located on the Milwaukee river where shipping conditions are such as to assure economical handling of grain and flour. The interior of the bread factory proper is finished in white tile and marble.

*Ches Bayley* **Turbo Air Washer**

## In One of the Largest Steel Plants

The necessity for air washing equipment is by no means restricted to food producing plants, as is plainly evident from the fact that one of the big steel companies has installed



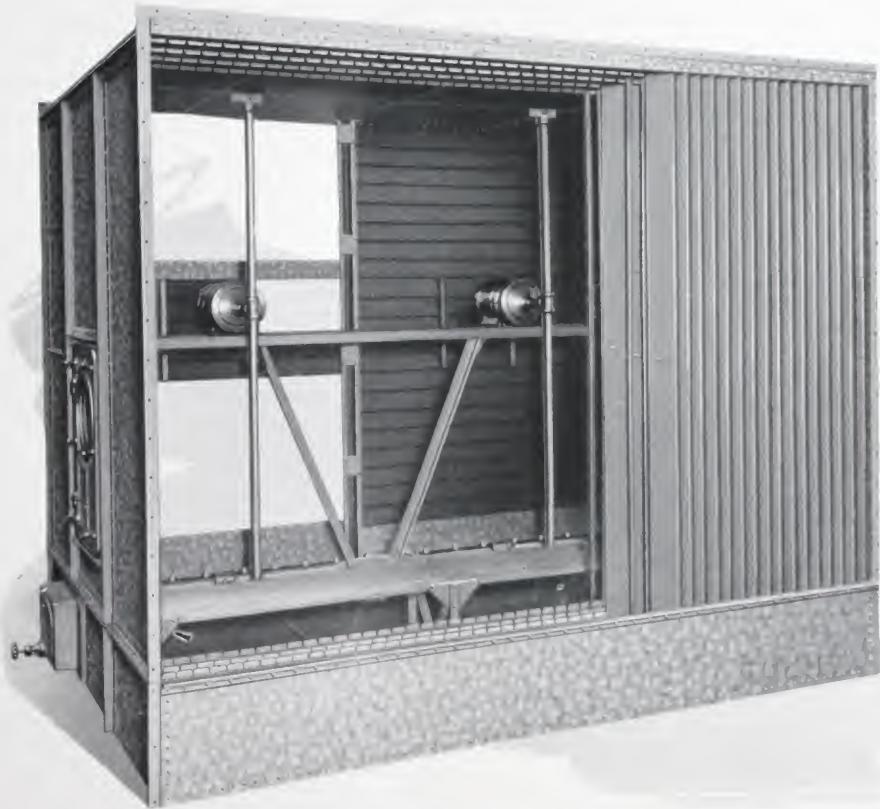
a Bayley Air Washer in its gas engine house. This installation of which the intake side of the spray chamber is shown on this page, is of the three atomizer type. It delivers 75,000 cubic feet of air every minute. The illustration shows in perspective the inspection door and service fitting side of the washer, the atomizers, and the eliminator baffles at the extreme right.

---

## Will Not Clog

---

The steel field represents only one of the many possible applications of air washers in the industrial field. The washer offers an efficient and economical means for washing gases in gas producing plants; in woodworking establishments where there is naturally a great amount of fine dust to be exhausted if the air in such establishments is to be kept fit for breathing. Where this dust is exhausted into the open air, and the air replaced from the outside, a great waste of heat is occasioned during the cold months. With the Bayley Air



Washer installed in such establishments, the air within the building can be run through the washer and recirculated, thus saving the heat that is otherwise wasted on the outside air.

The illustration above shows the air delivery side of the spray chamber of the Bayley Air Washer in a large restaurant showing the eliminator plates at the right, described in detail on pages 20 and 21.

*Ch<sup>e</sup>Bayley* **Turbo Air Washer****APPLIED TO**

**Industrial Buildings** The Bayley Air Washer is used in industrial buildings for supplying clean, properly tempered air to the working force thus increasing its efficiency, also in woodworking plants or other establishments where dust must be eliminated, for the removal of dust without loss of heat; in tanneries and chemical plants, in fact wherever a constant supply of clean air is essential.

**Office Buildings** are generally located in the more congested districts of cities, and in order to supply clean air to the occupants of buildings, it is necessary to have some reliable means of removing the impurities from the air that is used for ventilating such buildings. Tenants demand proper ventilation and clean surroundings, and they are willing to pay for them. Buildings equipped with air washing service command a much larger rental, so that an air washing installation becomes a source of additional revenue, and not an added expense.

**Public Buildings**, such as libraries, courthouses and halls need an abundance of clean air to prevent the spreading of diseases, as all classes of people assemble in such buildings. Where air in its atmospheric state is used for ventilating, the impurities from the outside are carried into buildings, and the damage to books, records, decorations and furnishings in such buildings is far greater in most cases than the cost of installing and maintaining an air washing system.

**Churches and Schools.** Wherever human beings congregate in large numbers the air is vitiated by the exhalations and is depleted of its lifegiving oxygen unless the breath laden air is replaced by pure air. This is especially true of churches and schools. Churches remain closed for certain periods of time during which the air within their walls becomes dead and flat. Air in a building that has been closed for some time is always impure and repulsive to respiratory organs. Schools, where the future citizens of the country are congregated during school hours must have pure air unless the health of the children is to suffer.

**Hospitals and Sanitariums:** must have an unfailing supply of air to aid in the healing processes, and to prevent the spreading of contagious diseases. The Bayley Turbo-Air Washer will supply the necessary volume of clean wholesome air so necessary in curative medical practice.

---

## Will Not Clog

---

**Theatres** that are well ventilated and that have a comfortable room temperature, free from noxious odors and dust are patronized more and by a better class of people. An air washer in a theatre will be found a profitable investment.

**Department Stores** have found it profitable to supply their patrons with plenty of fresh air. Shopping is tiresome, and people will not long remain in a store where the air is charged with odors either too warm or too cold. To drive them away with poor air means a loss of business. Soot and dust deposits on stock cause thousands of dollars worth of loss to department stores. Clean, dust-free air will save this.

**Food Producing Plants:** such as bakeries, dairy products factories, confectionery factories, meat products plants, in fact any food producing establishment must have clean air if the product is to meet with the requirements of the pure food act. The air washer is as necessary in such plants as the plant itself.

**Hotels and Restaurants** will not be patronized by the most desirable class of people unless they are kept strictly sanitary and comfortable. Plenty of clean air at the proper temperature is one of the prime requisites for sanitary and comfortable surroundings.

**Power Plants** The Bayley Turbo Air Washer is particularly adapted to the purpose of conditioning the air used in cooling generators and motors as well as cooling condenser water from steam engines, turbines, ice machines, and jacket water from air compressors.

---

## Specification Forms

For the convenience of architects and engineers, a typical set of specifications for an efficient Air Washer installation is reproduced on the following pages. In specifying details for a complete Air Conditioner, special conditions must be taken into consideration. Bayley engineers will gladly co-operate with any architect or engineer in determining the requirements of any contemplated air conditioner installation, by assisting in the preparation of plans and specifications.

## Ch. Bayley Turbo Air Washer

# Ch. Bayley Turbo Air Washer

## SPECIFICATION

To.....

..... Bayley Turbo..... Type.....

Capacity..... C. F. M. Velocity thru Washer..... F. P. M.

Overall Dimensions: Height..... Width..... Length.....

Casing Is to be constructed of..... firmly braced with..... angles.  
The seams and rivet heads are to be soldered so as to make the casing water-tight.

Inspection Door: A cast-iron inspection door with glass panel is to be placed in the casing for easy access to the interior; the door to be held shut by not less than six cams and made water-tight by the use of suitable packing.

Spray Chamber: The spray chamber is to contain..... Bayley Turbo Atomizers, each atomizing wheel mounted direct on the shaft of a water-proof, electric motor.

The atomizing apparatus to be arranged in such a way to give a uniform spray over the entire area of the washer.

Spray Motors: Are to be..... in number, each..... H. P..... R. P. M.

Wound for..... Current..... Volts..... Phase..... Cycle.

Circuit Breaker: Each atomizer is to be equipped with a push button starting switch and circuit breaker to protect for overload.

Water Pressure: The atomizing apparatus is to operate properly on a water pressure not to exceed..... lbs. per square inch.

Eliminators: In order to remove the entrained moisture from the air after it has been subjected to the spray, a series of baffles are to be provided. These are to be constructed of..... rigidly braced. Each baffle is to be made removable to facilitate repairs.

Tank: Is to be of the..... Type and is to extend under the entire washer. It is to be made of number..... gauge..... reinforced with..... angles.

Connections: Connections are to be provided for the pump discharge, pump suction, fresh water supply, overflow and drain.

Accessories: A marine light and ball cock is to be furnished with each washer.

Pump: The pump..... are to be furnished by the..... to be of the centrifugal..... suction type and to have capacity to deliver..... G. P. M. at..... lbs. pressure. They are to be..... connected to..... H. P..... R. P. M. motor..... wound for..... current..... volts..... phase..... cycles.

Direct connected pumps are to be mounted on a common cast iron sub-base.

### Performance Guarantees:

First—Remove 98% of all solid matter, excepting smoke from the incoming air.

Second—Eliminate all entrained water and free moisture from the air passing.

Third—Cool the entering air during summer not less than..... per cent of the initial wet bulb depression, using recirculated water.

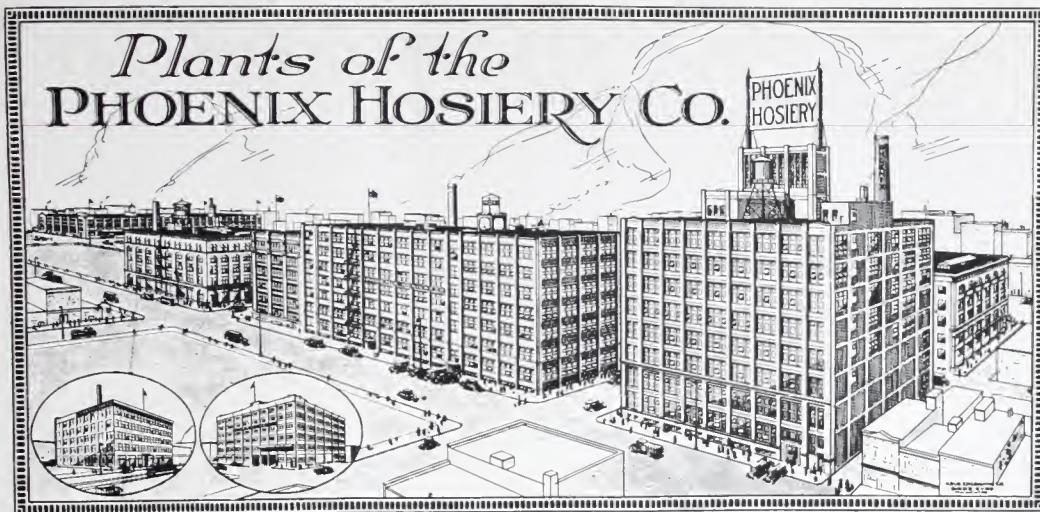
---

---

*Will Not Clog*

---

---



The illustration above shows the plants of the Phoenix Knitting Works of Milwaukee, Wis., a great industry and one of the largest of its kind devoted exclusively to the manufacture of knitted wear.

The building shown at the extreme right is their latest building and embraces in its design and construction, the latest refinements in building construction and equipment for Textile Plants.

These refinements are: Proper lighting; sanitation; the dissipation and removal of heat from certain departments made necessary because of the radiant heat given off in the process of drying and forming stockings; the absorption and removal of steam from the dye houses as it is generated, so as to prevent its dissipation throughout the building, there to condense and thus damage finished product, equipment and the building itself.

The management was insistent that their help in both the dye houses and Boarding Rooms were entitled to every consideration, reasonable and livable working conditions if possible to obtain, and their engineers were instructed to provide in their specifications for equipment that would insure such conditions in these departments, regardless of expense.

Working under these instructions and with these high objects in view, a study was made of existing plants where similar work was carried on. This survey was supplemented by careful tests, and predicated on results thus obtained, specifications were drawn in an effort to secure the best possible for this work, competition was had and contracts finally awarded to Bayley Manufacturing Co.

On the roof of this building located in pent houses shown, all the heating, ventilating, moisture absorbing, heat dissipating, and air cleaning apparatus are located, leaving the several floors unobstructed by such devices.

Bayley Plexiform Fans deliver into and exhaust from certain floors of this building, 26,700,000 cu. ft. of air per hour, while Bayley Chinook Heaters temper 12,000,000 cu. ft. of air per hour from minus 10 to the desired temperature, and Bayley Turbo Atomizers and Air Washers clean and condition 5,400,000 cu. ft. of air per hour before delivery into this building.

Lockwood, Greene & Co. of Chicago were the Architects and Engineers, and W. W. Oeflein of Milwaukee, Contractor, for this building.

## Ch. Bayley Turbo Air Washer

### Notable School Installations



Central Continuation School, Milwaukee

The illustration above shows the Central Continuation School, Milwaukee's Million Dollar School for advanced educational work. Van Ryn & DeGelleke were the Architects, Downey Heating & Supply Co. the Contractors.

This building is fully equipped with Bayley products—Bayley Plexiform Fans, Chinook Heaters and Turbo Air Washers.

Plexiform Fans deliver into this building each hour, 15,600,000 cu. ft. of air and this volume of air is warmed by passing over Chinook Heaters. Bayley Turbo Air Washers condition 9,600,000 cu. ft. of air per hour before delivery into this building.



Above is illustrated the Roosevelt High School now being erected at Des Moines, Iowa. Proudfoot, Bird & Rawson were the Architects, and Van Dyck Heating & Plumbing Co., Contractors, both of Des Moines, Iowa.

This is a very large building covering a large area of ground and costs something over One Million Dollars. Great care was taken in preparing specifications so as to obtain equipment throughout of the latest and very best in every line.

Bayley equipment was selected for heating, ventilating and air conditioning.

12,000,000 cu. ft. of air are delivered into this building every hour by Bayley Plexiform Fans and it is conditioned by passing through six Bayley Turbo Air Washers and tempered to the required room temperature before delivery into class rooms.

---

## Will Not Clog

---

### The First Wisconsin National Bank Bldg.

MILWAUKEE, WIS.

This building was equipped with conventional type of spray washers at the time of erection. Because of the very small water orifices, which clogged continually, uniform density of spray could not be maintained, give very indifferent cooling and washing effect, so gradually these washers (three in number) came into disuse.

Recently there were installed in these washers, three non-clogging Bayley Turbo Atomizers, displacing approximately 150 small orifice nozzles. By this change a sustained water screen was set up covering the entire area of washers, and as  $\frac{5}{6}$ " is the smallest opening for water, this spray is maintained 100% of the time, thus bringing these old washers into use again.



### Detroit Police Headquarters

At the left, Police Headquarters at Detroit, Mich., Albert Kahn, Architect; Drake-Avery Co., Contractors, both of Detroit.

Bayley Plexiform Fans deliver into and exhaust from this building 7,560,000 cu. ft. of air per hour, and 3,600,000 cu. ft. per hour is washed and conditioned by Bayley Turbo Air Washers.

## The Milwaukee Theatre

The Milwaukee Theatre at the right, built by the Teutonia Realty Co., Contractors, Dick & Bauer, Architects, Downey Heating Supply Co., Contractors, all of Milwaukee.

3,000,000 cu. ft. of air per hour is delivered into this building by Bayley Plexiform Fans, tempered by Bayley Chinook Radiation, washed and conditioned by passing through Bayley Turbo Air Washers, and reheated by passing over Bayley Chinook Heaters.



### Partial List of Washers Installed

30,000 cu. ft. Air Washer	Henrici's Restaurant .....	Chicago, Ill.
8,000 cu. ft. Air Washer	Atlas Bread Co. ....	Milwaukee, Wis.
75,000 cu. ft. Air Washer	Illinois Steel Co. ....	South Chicago, Ill.
9,000 cu. ft. Air Washer	U. S. Glue Co. ....	Carrollville, Wis.
39,000 cu. ft. Air Washer	Detroit Police Headquarters .....	Detroit, Mich.
19,000 cu. ft. Air Washer	Detroit Police Headquarters .....	Detroit, Mich.
50,000 cu. ft. Air Washer	Teutonia Realty Co's Bldg. ....	Milwaukee, Wis.
14,000 cu. ft. Air Washer	S. C. Johnson & Sons .....	Racine, Wis.
80,000 cu. ft. Air Washer	Continuation School .....	Milwaukee, Wis.
80,000 cu. ft. Air Washer	Continuation School .....	Milwaukee, Wis.
12,500 cu. ft. Air Washer	Pfister & Vogel Leather Co. ....	Milwaukee, Wis.
15,000 cu. ft. Air Washer	Penick & Ford .....	Cedar Rapids, Ia.
6,000 cu. ft. Air Washer	Eline's, Inc. ....	Milwaukee, Wis.
12,500 cu. ft. Air Washer	Murphy Co., Inc. ....	Waukon, Iowa.
16,000 cu. ft. Air Washer	Central Jr. High School.....	Saginaw, Mich.
21,000 cu. ft. Air Washer	Central Jr. High School.....	Saginaw, Mich.
24,000 cu. ft. Air Washer	Central Jr. High School.....	Saginaw, Mich.
80,000 cu. ft. Air Washer	Central Jr. High School.....	Saginaw, Mich.
70,000 cu. ft. Air Washer	Woodward Ave. M. E. Church .....	Detroit, Mich.
50,000 cu. ft. Air Washer	Woodward Ave. M. E. Church .....	Detroit, Mich.
43,000 cu. ft. Air Washer	Lincoln High School .....	Des Moines, Iowa.
8,000 cu. ft. Air Washer	Lincoln High School .....	Des Moines, Iowa.
23,500 cu. ft. Air Washer	Lincoln High School .....	Des Moines, Iowa.
30,000 cu. ft. Air Washer	Lincoln High School .....	Des Moines, Iowa.
8,000 cu. ft. Air Washer	Lincoln High School .....	Des Moines, Iowa.
43,000 cu. ft. Air Washer	Lincoln High School .....	Des Moines, Iowa.
56,000 cu. ft. Air Washer	Roosevelt High School .....	Des Moines, Iowa.
27,000 cu. ft. Air Washer	Roosevelt High School .....	Des Moines, Iowa.
49,000 cu. ft. Air Washer	Roosevelt High School .....	Des Moines, Iowa.
8,000 cu. ft. Air Washer	Roosevelt High School .....	Des Moines, Iowa.
56,000 cu. ft. Air Washer	Roosevelt High School .....	Des Moines, Iowa.
102,000 cu. ft. Air Washer	Whittier Jr. High School .....	Lincoln, Nebr.
51,000 cu. ft. Air Washer	Whittier Jr. High School .....	Lincoln, Nebr.
30,000 cu. ft. Air Washer	Mitchell Motors Corp. ....	Racine, Wis.
30,000 cu. ft. Air Washer	Mitchell Motors Corp. ....	Racine, Wis.
48,000 cu. ft. Air Washer	Wyandotte High School .....	Wyandotte, Mich
48,000 cu. ft. Air Washer	Wyandotte High School .....	Wyandotte, Mich
25,000 cu. ft. Air Washer	Wyandotte High School .....	Wyandotte, Mich
90,000 cu. ft. Air Washer	Phoenix Knitting Works .....	Milwaukee, Wis.
12,500 cu. ft. Air Washer	Hamilton Loan & Bldg. Ass'n .....	Hamilton, Ohio.
32,000 cu. ft. Air Washer	Middletown High School .....	Middletown, Ohio.
32,000 cu. ft. Air Washer	Middletown High School .....	Middletown, Ohio.
36,000 cu. ft. Air Washer	Middletown High School .....	Middletown, Ohio.
22,000 cu. ft. Air Washer	Research Laboratory, Pittsburg Plate Glass Co. ....	Milwaukee, Wis.
200,000 cu. ft. Air Washer	Booth & Flynn .....	Jersey City, N. J.
24,000 cu. ft. Air Washer	The Proctor & Gamble Co. ....	Pt. Ivory, N. Y.
36,000 cu. ft. Air Washer	The Industrial Fibre Co. ....	Cleveland, Ohio.
6,000 cu. ft. Air Washer	The Electric Supply & Equipment Co. ....	Albany, N. Y.
6,000 cu. ft. Air Washer	Briggs & Stratton Co. ....	Milwaukee, Wis.
72,000 cu. ft. Air Washer	Illinois Steel Co. ....	South Chicago, Ill.
32,000 cu. ft. Air Washer	Illinois Steel Co. ....	South Chicago, Ill.



